

Analytical Biochemistry

An International Journal

EDITOR: *Alvin Nason*

ADVISORY BOARD

<i>Norman G. Anderson</i>	<i>Evan C. Horning</i>	<i>Vincent Massey</i>
<i>Gilbert Ashwell</i>	<i>Rollin D. Hotchkiss</i>	<i>Manfred M. Mayer</i>
<i>James A. Bassham</i>	<i>Walter L. Hughes</i>	<i>Marshall Nirenberg</i>
<i>Samuel P. Bessman</i>	<i>Andrew A. Kandutsch</i>	<i>Kazuo Okunuki</i>
<i>Robert M. Bock</i>	<i>Irving Klotz</i>	<i>Herbert A. Sober</i>
<i>Robert L. Bowman</i>	<i>Luis F. Leloir</i>	<i>Sidney Udenfriend</i>
<i>Melvin Calvin</i>	<i>Olov Lindberg</i>	<i>Donald D. Van Slyke</i>
<i>John Gergely</i>	<i>Feodor Lynen</i>	<i>Samuel B. Weiss</i>
<i>I. C. Gunsalus</i>	<i>Hugh J. McDonald</i>	<i>Theodor Wieland</i>
<i>Osamu Hayaishi</i>	<i>Edward F. MacNichol, Jr.</i>	<i>George Wolf</i>
<i>C. H. W. Hirs</i>		<i>Lemuel D. Wright</i>

VOLUME 17

1966

ACADEMIC PRESS
New York and London



Copyright ©, 1966, by Academic Press Inc.

ALL RIGHTS RESERVED

No part of this volume may be reproduced in any form, by photostat, microfilm, or any other means, without written permission from the Publishers.

Made in the United States of America

CONTENTS OF VOLUME 17

NUMBER 1, OCTOBER 1966

H. HYDÉN, K. BJURSTAM, AND B. MCEWEN. Protein Separation of the Cellular Level of Micro Disc Electrophoresis	1
NOBUO IKEKAWA, OSAMU HOSHINO, REIKO WATANUKI, HAJIME ORIMO, TAKUO FUJITA, AND MASAKI YOSHIKAWA. Gas Chromatographic Separation of DNP Amino Acids and Its Application to the Analysis of Serum Amino Acids	16
GRANT N. SMITH. A Simple Method for Combusting Tissues for Chlorine-Cl ³⁶ Analysis	24
U. BACHRACH AND B. RECHES. Enzymic Assay for Spermine and Spermidine	38
GEORGE GORIN AND CHANG-CHEN CHIN. Urease. VI. A New Method of Assay and the Specific Enzymic Activity	49
CHANG-CHEN CHIN AND GEORGE GORIN. Urease. VII. Some Observations on the Assay Method of Summer	60
W. KORYTNYK, G. FRICKE, AND B. PAUL. Pyridoxine Chemistry. XII. Gas Chromatography of Compounds in the Vitamin B ₆ Group	66
JOHN H. COPENHAVER. Quantitative Analysis of Plasma Galactose and Glucose by Gas-Liquid Chromatography	76
JOSEPH R. MERKEL. Direct Detection of Proteolytic Enzymes That Have Been Separated by Zone Electrophoresis	84
FRANK EISENBERG, JR. An Improved Method for the Determination of Deuterium in Organic Compounds	93
JEAN-BERNARD LE PECQ AND CLAUDE PAOLETTI. A New Fluorometric Method for RNA and DNA Determination	100
H. J. VREMAN AND F. F. JÖBSIS. Interference by Mannitol and Other Compounds with Phosphate Determinations	108
BERNARD KOSER AND PETER OESPER. Separation of Glyceraldehyde 3-Phosphate from Inorganic Phosphate on Bisulfite Ion-Exchange Columns	119
GEORGE S. SERIF, LINDA SCHMOTZER, AND FRED R. BUTCHER. Pyridine Nucleotides. II. Radiometric Determination of Minute Quantities of Triphosphopyridine Nucleotides	125
MICHIKO HIRAMARU, TSUNeko UCHIDA, AND FUJIO EGAMI. Ribonuclease Preparation for the Base Analysis of Polyribonucleotides	135

TAKEO MATSUZAWA AND NOBUHIKO KATUNUMA. Colorimetric Assays for Serum Alanine Transaminase and Lactic Dehydrogenase Using Diazonium Zinc Salt	143
HERBERT NOWAK AND WILHELM F. KÖRNER. Automatic Determination of Xanthurenic Acid	154
G. B. JONES AND R. A. BUCKLEY. Determination of the Specific Activity of Labeled Lactate in Biological Fluids by Liquid Scintillation	162

SHORT COMMUNICATIONS

RONALD J. DOYLE AND HALLIN M. BURGAN. Use of Ultraviolet Absorption for Determination of Sugars	171
CARL J. SELISKAR. Separation of Phytylated and Non-Phytylated Chlorophylls by Thin-Layer Chromatography	174
GRANT G. SLATER. Injection Port with Zero Dead Space	177
B. HALPERN, J. W. WESTLEY, PATRICIA J. ANDERSON, AND J. LEDERBERG. Demonstration of the Stereospecific Action of Microorganisms in Soil by Gas Liquid Chromatography	179
ERRATUM	182

NUMBER 2, NOVEMBER 1966

MICHAEL K. BACH. The Quantitative Determination of Spermine with Platinic Iodide	183
M. POLLAY, A. STEVENS, AND C. DAVIS, JR. Determination of Plasma-Thiocyanate Binding and the Donnan Ratio under Simulated Physiological Conditions	192
CHRISTIAN SCHWABE. Disc Electrophoresis (Destaining, Staining, Protein Recovery)	201
WILLIAM F. MYERS AND KUN-YEN HUANG. Separation of Intermediates of the Citric Acid Cycle and Related Compounds by Thin-Layer Chromatography	210
PAUL CHUN AND C. W. GEHRKE. IBM-Fortran Computer Calculations for Analytical Ultracentrifuge Data	214
M. B. SMITH AND S. J. ROSE. A Modified Cell for Moving-Boundary Electrophoresis	236
M. G. HORNING, K. L. KNOX, C. E. DALGLIESH, AND E. C. HORNING. Gas-Liquid Chromatographic Study and Estimation of Several Urinary Aromatic Acids	244
SUSAN J. ATLAS AND KAROLY G. PINTER. Glass-Fiber Paper Chromatography of Vitamin E	258

A. A. HADJIOLOV, P. V. VENKOV, AND R. G. TSANEV. Ribonucleic Acids Fractionation by Density-Gradient Centrifugation and by Agar Gel Electrophoresis: A Comparison	263
LOUIS M. ALEDORT, ROBERT I. WEED, AND STANLEY B. TROUP. Ionic Effects on Firefly Bioluminescence Assay of Red Blood Cell ATP	268
R. L. BIELESKI AND N. A. TURNER. Separation and Estimation of Amino Acids in Crude Plant Extracts by Thin-Layer Electrophoresis and Chromatography	278
T. C. HALL AND C. J. WEISER. Liquid Scintillation Counting at Ambient Temperature	294
SAM KATZ AND ANNE LEWIS. Apparatus for High-Voltage Thin-Layer Electrophoresis: Application to Amino Acid Analysis	300
JOHN A. DUERRE AND CHRIS H. MILLER. Preparation of L-Homocysteine from L-Homocysteine Thiolactone	310
P. RÜST. A Simple Device for Dialyzing a Set of Many Individual Small Fractions	316
HERBERT TICHY. A Multisample Electrophoresis Apparatus Using Vertical Polyacrylamide Gel Slabs	320
W. L. VAN ES AND W. S. BONT. A Recording System for the Analytical Ultracentrifuge Equipped with Absorption Optics	327
SHORT COMMUNICATIONS	
HORST W. HOYER AND EDWARD J. BARRETT. Differential Thermal Analysis of Mixtures of DNA and Nucleosides	344
JOSEPH S. ROSENBERG AND GERALD LITWACK. Separation of <i>p</i> -Hydroxyphenylpyruvate and Its 3-Iodo Derivative on Bio-Gel P-2 Columns	347
ENRIQUE FIGUEROA AND PATRICIO VEGA. An Apparatus for Incubating Tissues at High Gaseous Pressures	350
M. E. ELDEFRAWI. Liquid Scintillation Counting of H ³ - and C ¹⁴ Compounds in Animal Tissues	353
ERRATUM	356

NUMBER 3, DECEMBER 1966

A. P. GAUNCE AND P. A. ANASTASSIADIS. An Estimation of the Noneluted Dye-Protein Complex from Paper Electropherograms through the Application of Langmuir's Isotherm Equation	357
MICHEL DROSDOWSKY AND NICOLAS EGOROFF. An Apparatus for Decontamination of Scintillation Counting Vials	365

HANS MOELLERING AND WOLFGANG GRUBER. Determination of Citrate with Citrate Lyase	369
E. CARWILE LeROY, EDWARD D. HARRIS, JR., AND ALBERT SJOERDSMA. A Modified Procedure for Radioactive Hydroxyproline Assay in Urine and Tissues after Labeled Proline Administration	377
S. RALPH HIMMELHOCH AND E. A. PETERSON. Experimental Problems in the Use of Commercially Prepared DEAE-Celluloses for Protein Chromatography	383
M. D. DABEVA AND R. G. TSANEV. Extraction of Rapidly Labeled Undegraded Ribonucleic Acid from Isolated Rat Liver Nuclei	390
ALBERT A. PLENTL AND WILLIAM T. KELLY. Synthesis of α -Tritiated L-Histidine, L-Arginine and L-Lysine	397
KYOUNG SOOK CHOI, KATHARINE W. LEE, AND ALLAN H. ROUSH. The Assay of Yeast Ureidoglycolatase	413
LEONARD FRANK. Proline Metabolism in <i>Escherichia coli</i> . IV. Preparation of Proline-2- and Proline-5- ^3H and Location of ^3H in Proline	423
JOHN E. BYFIELD AND OTTO H. SCHERBAUM. A Rapid Radioassay Technique for Cellular Suspensions	434
KEIICHIRO FUWA AND BERT L. VALLEE. A Multichannel Flame Spectrometer. I. Instrumental Design	444
HOLM HOLMSEN, INGER HOLMSEN, AND ARVID BERNHARDSEN. Microdetermination of Adenosine Diphosphate and Adenosine Triphosphate in Plasma with the Firefly Luciferase System	456
ELIZABETH AMBELLAN AND VINCENT P. HOLLANDER. A Simplified Assay for RNase Activity in Crude Tissue Extracts	474
WILLIAM M. LAMKIN, DARRELL N. WARD, AND EARL F. WALBORG, JR. Quantitative Determination of Neutral Monosaccharide Residues in Glycoproteins and Glycopeptides by Thin-Layer Densitometry	485
CONSTANTINE P. TSIGANOS AND HELEN MUIR. Estimation of Pentoses and Methylpentoses in Biopolymers, in Particular of Fucose and Xylose	495
DAVID KUPFER AND L. L. BRUGGEMAN. Determination of Enzymic Demethylation of <i>p</i> -Chloro- <i>N</i> -methylaniline. Assay of Aniline and <i>p</i> -Chloroaniline	502
GUIDO G. GUIDOTTI, ANGELO F. BORGHETTI, AND LODOVICO LORETI. A Colorimetric Method for the Quantitative Determination of Thiazolidine-4-carboxylic Acids	513
ROBERT K. ELLSWORTH AND HAROLD J. PERKINS. Gas Chromatographic Determination of Phytol	521
C. V. COLE AND CLEON ROSS. Extraction, Separation, and Quantitative Estimation of Soluble Nucleotides and Sugar Phosphates in Plant Tissues	526

STANLEY MANDELES AND HAROLD O. KAMMEN. Use of Activated Charcoal for Adsorption and Elution of Ribooligonucleotides	540
BHANDARU RADHAKRISHNAMURTHY, EDWARD R. DALFERES, JR., AND GERALD S. BERENSON. Determination of Hexosamines by Gas- Liquid Chromatography	545

SHORT COMMUNICATIONS

N. T. HINKS, S. C. MILLS, AND B. P. SETCHELL. A Simple Method for the Determination of the Specific Activity of Carbon Dioxide in Blood	551
HAROLD O. KAMMEN. A Rapid Assay for Thymidylate Synthetase	553
AUTHOR INDEX	557
SUBJECT INDEX	559

